

U.S. Patent Application No. 09/900,533
Amendment After Final dated December 9, 2003
Response to Office Action dated July 16, 2003

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

IN THE CLAIMS:

1. (currently amended) An aqueous-based composition comprising from about 40% to about 95% by weight cesium formate and at least one chelating agent, wherein said aqueous-based composition has a pH of from about 9 to about 14.
2. (original) The composition of claim 1, wherein the cesium formate is present in an amount of from about 3 M to about 12 M and said at least one chelating agent is present in an amount of from about 0.2 M to about 1.0 M.
3. (original) The composition of claim 1, wherein said chelating agent is at least partially ionic.
4. (original) The composition of claim 1, wherein said chelating agent is cationic.
5. (original) The composition of claim 1, wherein said chelating agent is anionic.
6. (original) The composition of claim 1, further comprising potassium formate.
7. (previously presented) The composition of claim 1, wherein said pH of said composition is from about 11 to about 13.
8. (original) The composition of claim 1, wherein said chelating agent is diethylenetriamine pentaacetic acid optionally having carboxylate anions.
9. (currently amended) The composition of claim 1, wherein said composition has a specific gravity of from about 1.2 g/cm³ to about 2.4 g/cm³.
10. (original) The composition of claim 1, wherein said aqueous-based composition is less than fully saturated with said cesium formate.

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11. (withdrawn) A method to reduce alkaline earth metal sulfate present on a surface comprising contacting said alkaline earth metal sulfate with the composition of claim 1.

12. (withdrawn) The method of claim 11, wherein said alkaline earth metal sulfate is present on a well bore surface.

13. (withdrawn) The method of claim 12, wherein said composition is introduced at the bottom hole of the well bore.

14. (withdrawn) The method of claim 12, wherein said composition is introduced while recovery of hydrocarbons is occurring from said well bore.

15. (withdrawn) The method of claim 12, wherein said composition reaches a temperature of at least 50° C in the presence of said alkaline earth metal sulfate.

16. (withdrawn) The method of claim 12, wherein said composition and dissolved alkaline earth metal sulfate are recovered.

17. (withdrawn) The method of claim 14, wherein said composition and dissolved alkaline earth metal sulfate are recovered from the well bore at the surface of the well and wherein said composition separates from the hydrocarbons by phase separation and said alkaline earth metal sulfate precipitates out of solution.

18. (currently amended) A method to remove scaling deposits present on a well bore surface comprising contacting said scaling deposits with ~~an~~ the aqueous-based composition of claim 1 ~~comprising at least one alkali metal formate and at least one chelating agent~~, wherein said composition is introduced while recovery of hydrocarbons is occurring from said well bore.

19. (withdrawn) The method of claim 18, wherein said alkali metal formate comprises cesium formate.

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20. (withdrawn) The method of claim 18, wherein said alkali metal formate comprises potassium formate.

21. (withdrawn) The method of claim 18, wherein said composition comprises cesium formate and potassium formate.

22. (withdrawn) The method of claim 18, wherein said composition and dissolved scaling deposits are recovered from the well bore at the surface of the well and wherein said composition separates from the hydrocarbons by phase separation and at least a portion of said scaling deposits precipitate out of aqueous solution.

23. (withdrawn) The method of claim 19, wherein the cesium formate is present in an amount of from about 3 M to about 12 M and said at least one chelating agent is present in an amount of from about 0.2 to about 1.0 M.

24. (withdrawn) The method of claim 18, wherein said chelating agent is diethylenetriamine pentaacetic acid optionally having carboxylate anions.

25. (currently amended) A completion fluid comprising at least one alkali metal formate, at least one acid, at least one surfactant, and optionally at least one chelating agent, wherein said at least one alkali metal formate is present in an amount of from about 40% to about 95% by weight, wherein said completion fluid has a pH of from 9 to about 14.

26. (original) The completion fluid of claim 25, wherein said alkali metal formate comprises cesium formate.

27. (original) The completion fluid of claim 25, wherein said alkali metal formate comprises cesium formate and potassium formate.

28. (original) The completion fluid of claim 25, wherein said alkali metal formate comprises

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potassium formate.

29. (original) The completion fluid of claim 25, wherein said acid is formic acid or an acid derivative thereof.

30. (currently amended) The completion fluid of claim 25, further comprising wherein said surfactant or a mutual solvent or both are present.

31. (original) The completion fluid of claim 25 30, wherein said surfactant ~~or mutual solvent~~ comprises a mixture of an ethylene oxide/propylene oxide adduct of an acrylate copolymer, polymeric hydroxyethylethylene urea, monobutyl ethylene glycol, ethoxylated long chain alcohols, sulfated long chain alcohols, or combinations thereof.

32. (currently amended) The completion fluid of claim 25, wherein said completion fluid has a specific gravity of from about 1.2 g/cm^3 to about 2.4 g/cm^3 .

33. (currently amended) A completion fluid comprising at least one alkali metal formate, at least one acid, at least one surfactant and optionally at least one chelating agent, wherein said at least one alkali metal formate is present in an amount of from about 40% to about 95% by weight ~~The completion fluid of claim 25,~~ wherein the alkali metal formate is present in an amount of from about 3 M to about 12 M and said at least one acid is present in an amount of from about 0.2 M to about 12 M.

34. (currently amended) A spent completion fluid comprising at least one alkali metal formate, at least one acid, at least one surfactant, and a dissolved or solubilized filter cake, and optionally, at least one chelating agent, wherein said at least one alkali metal formate is present in an amount of from about 40% to about 95% by weight, wherein said spent completion fluid has a pH of 9 to about 14.

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35. (original) The spent completion fluid of claim 34, wherein said filter cake comprises a fluid loss agent.

36. (original) The spent completion fluid of claim 34, wherein said filter cake comprises calcium carbonate or at least one alkaline earth metal sulfate or both and optionally at least one fluid loss agent.

37. (original) The spent completion fluid of claim 34, wherein said filter cake further comprises drilling fines.

38. (original) The spent completion fluid of claim 34, wherein said alkali metal formate comprises cesium formate.

39. (original) The spent completion fluid of claim 34, wherein said alkali metal formate comprises cesium formate and potassium formate.

40. (original) The spent completion fluid of claim 34, wherein said alkali metal formate comprises potassium formate.

41. (original) A spent completion fluid comprising at least one alkali metal formate, at least one acid, at least one surfactant, and a dissolved or solubilized filter cake, and optionally, at least one chelating agent, wherein said at least one alkali metal formate is present in an amount of from about 40% to about 95% by weight ~~The spent completion fluid of claim 34,~~ wherein said alkali metal formate is present in an amount of from about 3 M to about 12 M and said at least one acid is present in an amount of from about 0.2 M to about 12 M.

42. (original) The spent completion fluid of claim 34, wherein said acid comprises formic acid or an acid derivative thereof.

43. (currently amended) The spent completion fluid of claim 34, wherein said surfactant or

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~~mutual solvent~~ comprises a mixture of a ethylene oxide/propylene oxide adduct of an acrylate copolymer and polymeric hydroxyethylethylene urea.

44. (withdrawn) A method to remove a filter cake present on a well bore surface comprising contacting said filter cake with the completion fluid of claim 25.

45. (withdrawn) The method of claim 44, wherein said filter cake comprises a fluid loss agent.

46. (withdrawn) The method of claim 44, wherein said filter cake comprises calcium carbonate, at least one alkaline earth metal sulfate, at least one fluid loss agent, or combinations thereof.

47. (withdrawn) The method of claim 44, wherein said filter cake further comprises drilling fines.

48. (withdrawn) The method of claim 44, wherein said completion fluid and dissolved or solubilized filter cake are recovered.

49. (withdrawn) The method of claim 44, wherein said completion fluid and dissolved or solubilized filter cake are recovered from the well bore at the surface of the well during recovery of hydrocarbons and wherein said completion fluid separates from the hydrocarbons by phase separation and said filter cake or a portion thereof precipitates out of solution.

50. (withdrawn) The method of claim 44, wherein said alkali metal formate comprises cesium formate, potassium formate, or both.

51. (withdrawn) The method of claim 44, wherein the alkali metal formate is present in an amount of from about 3 M to about 12 M and said at least one acid is present in an amount of from about 0.2 M to about 12 M.

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52. (withdrawn) The method of claim 48, further comprising raising the pH of the spent completion fluid to a pH range of from about 10.5 to about 12 and filtering said spent completion fluid.

53. (original) The completion fluid of claim 25, wherein the alkali metal formate is present in an amount of from about 3 M to about 12 M and said at least one chelating agent is present in an amount of from about 0.2 M to about 1.0 M.

54. (original) The completion fluid of claim 25, wherein said chelating agent is at least partially ionic.

55. (currently amended) The completion fluid of claim ~~33~~ 25, wherein said ~~pH of said completion fluid is from about 9 to about 14~~ alkali metal formate comprises cesium formate.

56. (original) The completion fluid of claim 25, wherein said chelating agent is diethylenetriamine pentaacetic acid optionally having carboxylate anions.

57. (original) The spent completion fluid of claim 34, wherein the alkali metal formate is present in an amount of from about 3 M to about 12 M and said at least one chelating agent is present in an amount of from about 0.2 M to about 1.0 M.

58. (withdrawn) The method of claim 44, wherein the alkali metal formate is present in an amount of from about 3 M to about 12 M and said at least one chelating agent is present in an amount of from about 0.2 M to about 1.0 M.

59. (currently amended) The completion fluid of claim 25, wherein said ~~surfactant or mutual solvent~~ comprises at least one sodium or ammonium salt of acrylic acid copolymer, optionally containing one or more alkylene oxide adducts.

60. (previously presented) An aqueous-based composition comprising cesium formate and at

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least one chelating agent, wherein said chelating agent is cationic.